

Total number of printed pages-4

3 (Sem - 5/CBCS) BOT HC 2

2025

BOTANY

(Honours Core)

Paper : BOT - HC - 5026

(Plant Physiology)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following : 1×7=7

(a) What is the measure of the osmotic pressure gradient of solutions separated by a semi permeable membrane ?

(I) Tonicity

(II) Turgour pressure

(III) Water Potential

(IV) Ficks law

- (b) Deficiency of _____ causes the leaves to develop a dark green colouration.
- (I) Phosphorus
 - (II) Potassium
 - (III) Sodium
 - (IV) None of the above
- (c) Name the red light photoreceptor of the plant ?
- (I) Phytochrome
 - (II) Cryptochrome
 - (III) Phototropin
 - (IV) Vernalin
- (d) Which of the following is a terpene derivative ?
- (I) Ethylene
 - (II) ABA
 - (III) Auxin
 - (IV) GA
- (e) The conversion of ammonia into nitrates through *Nitrosomonas* is called
- (I) Nitrogen fixation
 - (II) Denitrification
 - (III) Ammonification
 - (IV) Nitrification

- (f) Na^+ glucose transporter is an example of:
- (I) Symport
 - (II) Antiport
 - (III) Facilitated diffusion
 - (IV) ATP driven active transport
- (g) The phloem sap consists of :
- (I) Amino acid
 - (II) Sucrose
 - (III) Hormones
 - (IV) Stachyose

2. Write short answer on the following :

$2 \times 4 = 8$

- (a) What is vernalization ? Who coined the term vernalization ?
- (b) Write difference between Short Day Plant (SDP) and Long Day Plant (LDP).
- (c) Source-Sink relationship
- (d) Proton ATPase Pump

3. Answer **any three** from the following :

$5 \times 3 = 15$

- (a) Role of ABA as stress hormone.
- (b) "Transpiration is necessary evil"
—Justify.

- (c) Write the difference between Apoplast and Symplast.
- (d) Role of ATP as Carrier.
- (e) Describe the process of natural and artificial breaking of seed dormancy.

4. Answer *any three* from the following :

10×3=30

- (a) Define ascent of sap and explain briefly the Cohesion-tension theory of ascent of sap. 2+8=10
- (b) What are micro and macronutrients? Why are they so called? Write the roles of nitrogen, phosphorus and magnesium in plants. 2+2+6=10
- (c) Describe the mechanism of absorption of mineral salts by plants. How does it differ from the absorption of water? 8+2=10
- (d) Explain the mechanism of translocation with the help of Munch's hypothesis.
- (e) Describe the mechanism of biosynthesis of 'Auxin' and their role in plant growth and development. 5+5=10
- (f) What is phytochrome? Explain its role in physiology of flowering. 2+8=10